MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN, JOINT CHIEFS OF STAFF
UNDER SECRETARIES OF DEFENSE
ASSISTANT SECRETARY OF DEFENSE (COMMAND, CONTROL, COMMUNICATIONS, AND INTELLIGENCE)
GENERAL COUNSEL
INSPECTOR GENERAL
DIRECTOR, OPERATIONAL TEST AND EVALUATION
DIRECTORS, DEFENSE AGENCIES

SUBJECT: Use of Integrated Product and Process Development and Integrated Product Teams in DoD Acquisition

All of us in the Department have worked hard to find the best methods for reengineering our processes. Several Defense Science Board studies have addressed the benefits of using Integrated Process and Product Development (IPPD) concepts. The Defense Manufacturing Council has strongly recommended IPPD's implementation within the Department. The IPPD concept has been successfully used by the private sector and by the Services on selected programs to reduce product cost and to field products sooner.

IPPD is a management technique that simultaneously integrates all essential acquisition activities through the use of multidisciplinary teams to optimize the design, manufacturing, and supportability processes. The IPPD key tenets are described in attachment 2.

Additionally, various groups, including the Systems Acquisition Oversight and Review Process Action Team, the Defense Manufacturing Council, the Program Executive Officer/Systems Commander (PEO/SYSCOM) Conference participants, and the Defense Acquisition Board principals have recommended the use of Integrated Product Teams (IPT) for program management and oversight. IPTs are the key to making IPPD work.

IPTs (described in attachment 1) include representatives from all appropriate functional disciplines working together to build successful programs and enabling decisionmakers to make the right decisions at the right time. IPTs are currently being used successfully by many industry and government program managers.

After consideration of these recommendations, I am directing a fundamental change in the way the Department acquires goods and services. The concepts of IPPD and IPTs shall be applied throughout the acquisition process to the maximum extent practicable.

I want all those involved in the acquisition process to employ these concepts for all acquisitions when it makes sense. The Department's oversight staffs shall fundamentally shift their roles from sequentially checking on a program beginning six months prior to a milestone decision point to participating early to facilitate program success through continuous teamwork and assistance throughout the acquisition process.

Effective immediately, the Department shall:

- Perform as many acquisition functions as possible, including oversight and review, using IPTs, in a spirit of teamwork, with participants empowered and authorized to the maximum extent possible to make commitments for the organization or functional area they represent.

- Involve key personnel early, and encourage timely decision-making.

- Promote flexible, tailored approaches to oversight and review based on mutual trust, while considering program size, risk, and complexity.

The Under Secretary of Defense (Acquisition and Technology) shall include the use of IPTs and IPPD in the next update to DoDD 5000.1 and DoDI 5000.2.

I need your personal involvement and commitment to ensure that the concepts of IPPD and IPTs are effectively implemented. By using the best practices from both the public and private sectors, we can enhance our ability to provide what the warfighter needs, when needed and at a cost that the Department can afford.

William J. Perry

Attachments
As stated

cc:
CINC USSCOM
DPA&E

The Use of Integrated Product Teams in DoD Acquisition

Purpose

This paper:

- Defines Integrated Product Teams (IPTs), states their purpose, and describes how they are used to implement the concept of Integrated Product and Process Development (IPPD).
- Defines IPPD and describes the successful use of IPTs by government Program Managers.
- Describes how IPTs will be used to develop, acquire, and support our systems and fundamentally change the role of the OSD and Component staff organizations currently performing oversight and review of acquisition programs.

IPPD and IPTs

Integrated Product and Process Development (IPPD) is a management technique that simultaneously integrates all essential acquisition activities through the use of multidisciplinary teams to optimize the design, manufacturing and supportability processes. IPPD facilitates meeting cost and performance objectives from product concept through production, including field support. One of the key IPPD tenets (all of which are described at attachment 2) is multidisciplinary teamwork through Integrated Product Teams (IPTs). These teams enable making the right decisions at the right time.

IPTs are composed of representatives from all appropriate functional disciplines working together with a Team Leader to build successful and balanced programs, identify and resolve issues, and make sound and timely decisions. Team members do not necessarily commit 100% of their time to an IPT, and a person may be a member of more than one IPT.

The purpose of IPTs is to make team decisions based on timely input from the entire team (e.g., program management, engineering, manufacturing, test, logistics, financial management, contracting personnel, contract administration) including customers and suppliers. IPTs are generally formed at the Program Manager level and may include members from both Government and the system contractor. A typical IPT at the program level, for example, may be composed of the following functional descriptions: design engineering; manufacturing; systems engineering; test and evaluation; subcontracts; safety and HAZMAT; quality assurance; training; finance; reliability, maintainability, and supportability; suppliers; and customers.

Characteristics of an IPT

The Under Secretary of Defense (Acquisition & Technology) has recently identified critical changes that must take place in DoD in order for successful IPTs to be formed. DoD must:

> "*...move away from a pattern of hierarchical decision-making to a process where decisions are made across organizational structures by integrated product teams. It means we are breaking down institutional barriers. It also means that our senior acquisition staffs are in a receive mode -- not just a transmit mode. The objective is to be receptive to ideas from the field to obtain buy-in and lasting change."*[1]

These changes reflect the two most important characteristics of IPTs:

- **Cooperation.** Cooperation is essential. Teams must have full and open discussions with no secrets. All the facts need to be on the table for each team member to understand and assess. Each member brings a unique expertise to the team that needs to be recognized by all. Because of that expertise, each person's views are important in developing a successful program, and these views need to be heard. Full and open discussion does not mean that each view must be acted on by the team. The team is not searching for "lowest common denominator" consensus. There can be disagreement on how to approach a particular issue, but that disagreement must be reasoned disagreement based on an alternative plan of action rather than unyielding opposition. Issues that cannot be resolved by the team must be identified early so that resolution can be achieved as quickly as possible at the appropriate level.

- **Empowerment.** Empowerment is critical. The functional representatives assigned to the IPT at all levels must be empowered by their leadership to give good advice and counsel to the Program Manager. They must be able to speak for their superiors, the "principals," in the decision making process. IPT members cannot be expected to have the breadth of knowledge and experience of their leadership in all cases. However, they are expected to be in frequent communication with their leadership, and thus ensure that their advice to the Program Manager is sound and will not be overturned later, barring unforeseen circumstances or new information. One of the key responsibilities of our leadership is to train and educate their people so they will have the required knowledge and skills to represent their organization's leaders. As IPT members, people are an extension of their organizations and their leadership, and they must be able to speak for those organizations and leaders.

This approach has been shown to work in the test area, for example. A test strategy IPT includes test representatives from the program office, service testing agency, component acquisition executive or PEO staff, and OSD operational and developmental test offices. The purpose of the IPT is to outline the test and evaluation master plan for a major program. The objective of such an IPT would be to reach agreement on the strategy and plan by understanding the issues, the rationale for the approach, identifying and resolving issues early and, finally, documenting a quality Test and Evaluation Master Plan (TEMP) that would be acceptable to all organizational levels the first time it was submitted for approval.

This IPT process replaces the current sequential process that produces a TEMP at the program office level which, when reviewed at higher levels, is frequently modified substantially

[1] Remarks to the Industrial College and the Armed Forces: "The Defense Acquisition Challenge: Technological Supremacy at an Affordable Cost," Honorable Paul G. Kaminski, January 27, 1995.

or even rejected. Such a sequential review and approval process takes considerably more time than an integrated team approach that takes advantage of all members' expertise and produces an acceptable product the first time.

IPTs in the Oversight and Review Process

Because of the tremendous benefits of working as integrated teams, the use of IPTs is being expanded to levels above the Program Manager to ensure DoD enlists all of the Department's expertise to help Program Managers build balanced and successful DoD programs, resolve issues early in the process, and more efficiently prepare for review of programs.

In the oversight and review process, IPTs will be structured differently from the cross-functional, horizontally-integrated teams used by Program Managers. Instead, "overarching" IPTs would be vertically integrated in that they would be comprised of members from various staff and line levels.

For acquisition category (ACAT) ID programs, a broader, more inclusive vertical team, or "Overarching IPT," consisting of representatives from the PM, PEO, SAE, and DAE and other representatives (e.g., Joint Staff, PA&E, Comptroller, DOT&E, etc.), will be formed to consider strategies for acquisition/contract, cost estimates, Cost and Operational Effectiveness Analyses (COEAs), logistics management, etc., and to prepare for the next program review or milestone decision by tailoring documentation, resolving issues, and identifying program risk areas early. The program presented to the DAE/CAE should have an acceptable acquisition strategy, acquisition program baseline, cost estimate, test strategy, etc. in a tailored and streamlined fashion, the first time these positions or documents are presented. The goal would be to resolve as many issues and concerns at the lowest level possible, and quickly identify and escalate issues that need resolution at a higher level, bringing only the highest level issues to the DAE for decision.

The Overarching IPT leader for ACAT ID programs will provide an independent assessment to the DAE and DAB at major program reviews and/or milestone decision points using information gathered through the IPT process. There should be no surprises at this point, however, because all team members are working the issues in real time, and should be knowledgeable of the independent assessment. Under the accelerated decision process illustrated in the attached figure, IPTs will be working to tailor the process as appropriate for the specific program and resolve issues during the entire span between milestones. Thus, the program will keep moving in a direction acceptable to the entire acquisition organization.

This process is different from what we have today. IPTs are being created to allow their members to work together to ensure the success of the Department's programs.

Although the above direction most directly applies to ACAT ID programs, the concepts should be applied to programs in all acquisition categories.

Conclusion

Various aspects of this overall concept need to be refined and adjusted through actual practice. This IPT concept has the potential, however, to help us shift "... from an environment of regulation and enforcement to one of incentivized performance,... and to create a climate of reasoned, well informed risk-taking by our PEOs and PMs."[2]

Additional details of the IPT process will evolve through practice and will be documented in appropriate DoD instructions.

Attachment 2
As stated

[2] Ibid.

INTEGRATED PRODUCT AND PROCESS DEVELOPMENT (IPPD) TENETS:

IPPD is an expansion of concurrent engineering utilizing a systematic approach to the integrated, concurrent development of a product and its associated manufacturing and sustainment processes to satisfy customer needs.

IPPD Defined: A management process that integrates all activities from product concept through production/field support, using a multi-functional team, to simultaneously optimize the product and its manufacturing and sustainment processes to meet cost and performance objectives. Its key tenets are as follows:

1. Customer Focus - The primary objective of IPPD is to satisfy the customer's needs better, faster and at less cost. The customer's needs should determine the nature of the product and its associated processes.

2. Concurrent Development of Products and Processes - Processes should be developed concurrently with the products which they support. It is critical that the processes used to manage, develop, manufacture, verify, test, deploy, operate, support, train people, and eventually dispose of the product be considered during product development. Product and process design and performance should be kept in balance.

3. Early and Continuous Life Cycle Planning - Planning for a product and its processes should begin early in the science & technology phase (especially advanced development) and extend throughout a product's life cycle. Early life cycle planning, which includes customers, functions and suppliers, lays a solid foundation for the various phases of a product and its processes. Key program events should be defined so that resources can be applied and the impact of resource constraints can be better understood and managed.

4. Maximize Flexibility for Optimization and Use of Contractor Unique Approaches - Requests for Proposals (RFP's) and contracts should provide maximum flexibility for optimization and use of contractor unique processes and commercial specifications, standards and practices.

5. Encourage Robust Design and Improved Process Capability - Encourage use of advanced design and manufacturing techniques that promote achieving quality through design, products with little sensitivity to variations in the manufacturing process (robust design) and focus on process capability and continuous process improvement. Utilize such tools as “Six-Sigma” process control and lean/agile manufacturing concepts to advantage.

6. Event-Driven Scheduling - A scheduling framework should be established which relates program events to their associated accomplishments and accomplishment criteria. An event is considered complete only when the accomplishments associated with the event have been completed as measured by the accomplishment criteria. This event-driven scheduling reduces risk by ensuring that product and process maturity are incrementally demonstrated prior to beginning follow-on activities.

7. Multidisciplinary Teamwork - Multidisciplinary teamwork is essential to the integrated and concurrent development of a product and its processes. The right people at the right place at the right time are required to make timely decisions. Team decisions should be based on the combined input of the entire team (e.g. engineering, manufacturing, test, logistics, financial management, contracting personnel) to include customers and suppliers. Each team member needs to understand their role and support the roles of the other members, as well as understand the constraints under which other team members operate. Communication within teams and between teams should be open with team success emphasized and rewarded.

8. Empowerment - Decisions should be driven to the lowest possible level commensurate with risk. Resources should be allocated at levels consistent with authority, responsibility, and the ability of the people. The team should be given the authority, responsibility, and resources to manage their product and its risk

commensurate with the team's capabilities. The team should accept responsibility and be held accountable for the results of their effort.

9. Seamless Management Tools - A framework should be established which relates products and processes at all levels to demonstrate dependency and interrelationships. A single management system should be established that relates requirements, planning, resource allocation, execution and program tracking over the product's life cycle. This integrated approach helps ensure teams have all available information thereby enhancing team decision making at all levels. Capabilities should be proved to share technical and business information throughout the product life cycle through the use of acquisition and support databases and software tools for accessing, exchanging, and viewing information.

10. Proactive Identification and Management of Risk - Critical cost, schedule and technical parameters related to system characteristics should be identified from risk analyses and user requirements. Technical and business performance measurement plans, with appropriate metrics, should be developed and compared to best-in-class industry benchmarks to provide continuing verification of the degree of anticipated and actual achievement of technical and business parameters.

Attachment 2